



Australian Racing Board

PROPOSED AMENDMENTS TO NEW HELMET STANDARD

The ARB believes that there is a need to make minor amendments to the ARB's helmet standard as an anvil impact test on the side of the helmet has inadvertently created the near impossibility of a manufacturer meeting the standard. Expert advice recommends that the anvil impact test be repositioned in a way that does not compromise the purpose and intent of ARB HS 2012 nor the safety of the helmet.

The amendments to ARB HS 2012 are highlighted in yellow below.

ARB Helmet Safety Standard HS 2012 (12 November 2013)

incorporating ARB Higher Performance Safety Requirements 2012

Shortform name: ARB HS 2012

ELEMENTS OF ARB HS 2012

Helmets **shall**:

- (A) Conform to one of these standards:
 - (a) AS/NZS 3838 2006;
 - (b) United States (US) ASTM F11 63-01;
 - (c) British Standards (BS) EN 1384/1996 onwards.
 - (d) United States (US) ASTM F11 63-04a (reapproved 2011) ; and
- (B) Meet the additional performance requirements specified below.

ADDITIONAL PERFORMANCE REQUIREMENTS

The helmet¹, in all sizes offered for use in horse racing, shall meet the following additional performance requirements

(i) Impact Energy Attenuation

1. Requirement

¹ The "helmet" is the complete helmet as offered for sale including any attachments.

High Energy Impact Test: When the helmet is tested in accordance with AS/NZS 2512.3.1 or equivalent method from a free-fall height (or equivalent impact energy for specific headform) of (1) 2500 +30, -5 mm for the flat anvil and (2) 2000 +30, - 5 mm for the Hazard V-anvil (as specified in standards A(a), A(b) or A(d)) the headform acceleration shall not exceed 250g_n peak. In addition, the cumulative duration of the acceleration shall not exceed (a) 3.0 ms for accelerations greater than 200g_n and (b) 6.0 ms for accelerations greater than 150g_n. The anvil shall not make contact with the surface of the headform.

Note: g_n signifies an acceleration due to gravity of 9.81 m/s².

2. Test Sites

For the flat anvil high energy impact tests, test sites shall comply with section 7.9.1 of AS/NZS 3838: 2006. For the Hazard V-anvil high energy impact tests, test sites shall comply with section 7.9.1 of AS/NZS 3838: 2006. In addition, for the Hazard V-anvil high energy impact tests, no greater than one third of the length of the vertex of the anvil shall extend below the test line. Within these specifications the selection of the tests sites is at the discretion of the testing body.

3. Helmet Conditioning

Helmets shall be tested in the ambient condition.

(ii) Dynamic Strength of the Retention System

The helmet shall meet a relevant test in the standards referred to in sub rule A(b), A(c) and A(d)² or when tested in accordance with AS/NZS 2512.5.2 with a drop height of 0.25 m, the dynamic displacement shall not exceed 30 mm.

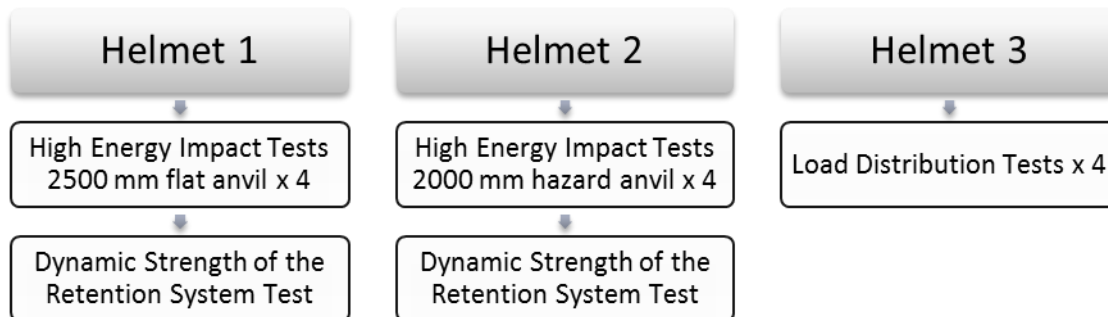
(iii) Load Distribution

When tested in accordance to AS/NZS 2512.9 with a drop height of 1 m, the localised load shall not exceed 250 N. The anvil shall not make contact with the surface of the headform.

(iv) Test Sequence and Number of Helmets

Three helmets for each helmet size are required. Helmet one shall be subjected to four 2500 mm flat anvil high energy impact tests followed by the dynamic strength of the retention system test. Helmet two shall be subjected to four 2000 mm hazard anvil high energy impacts tests followed by the dynamic strength of the retention system test. All load distribution tests shall be conducted on helmet three. The following represents the test pathway –

² Prevents duplication of testing. The dynamic strength test is absent from AS/NZS 3838.



- (C) all helmets shall be fitted with a plastic interlocking chinstrap buckle.
- (D) all helmets shall be clearly marked with a date of manufacture.
- (E) the use of helmets is subject to the conditions of Australian Rule of Racing 87AA.

“AR.87AA.

(1) Every rider shall be responsible for the care and condition of his helmet.

(2) A helmet is not regarded as serviceable and must be immediately replaced by the rider when –

- (a) a period of 5 years has expired since its date of manufacture, or
- (b) it sustains a severe impact, or
- (c) the wearer suffers from concussion following a fall.

(3) The Stewards may at any time take possession of a helmet for inspection and may at their absolute discretion confiscate any helmet that does not comply with the requirements of this rule and/or the requirements of AR 87.”

Notes:

- i) Flat anvil – the flat anvil defined in all four standards referred to in (A) is virtually the same.
- ii) Equestrian Hazard V anvil - there are minor differences between AS/NZS 3838 and the ASTM standards referred to in (A). Helmets can be tested against either anvil.
- iii) Headforms – the standards in (A) all refer to ISO headforms.
- iv) Drop rig for impact energy attenuation – there are three different potential drop rigs described in the standards referred to in (A). AS/NZS 3838 and ASTM refer to a 2-wire drop rig. ASTM also refers to a monorail system. EN 1384 refers to a 3-wire system with a free headform. Helmets can be tested using one of these three systems as long as the impact energy is maintained (drop height x drop mass x gravity).

- v) Dynamic Stability – Differences exist between all standards referred to in (A). The helmet shall meet a dynamic stability test in one of the standards referred to in (A).
- vi) Dynamic Strength - Differences exist between all standards referred to in (A). The helmet shall meet a dynamic strength test in one of the standards referred to in (A).

For more details on test rigs, test equipment and requirement summary for equestrian helmets, please contact the Australian Racing Board.